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# APPENDIX G

## Packstock Management Guide

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### Introduction

This Packstock Management Guide is a reference source for wilderness managers and cooperators and is designed to assist in the implementation of management direction for Ansel Adams, John Muir and Dinkey Lakes Wildernesses. The guide is based upon Modified Alternative 1, the proposed action and preferred alternative described in Chapter II. It may be revised to accurately reflect direction in the Record of Decision. The guide was compiled using existing guidelines contained in existing Forest Service manuals, handbooks and field guides for range, livestock and special uses management. Recommended reading sources are cited on specific topics needing further guidance.

### Goals and Objectives

All rangelands are properly functioning and in satisfactory condition. ***Properly functioning riparian and meadows*** are defined as having adequate vegetation, landform or large woody debris present to:

- dissipate energies associated with wind & water;
- filter sediments and aid floodplain development
- improve floodwater retention and ground-water recharge;
- develop root masses that stabilize geomorphic features;
- develop diverse pond and channel characteristics;
- support greater biodiversity.

***Properly Functioning Uplands*** are defined as having adequate integrity of soil and ecological processes to sustain the capacity of rangelands to satisfy values and produce commodities. Soil and biotic indicators are observed as being stable and resilient at the watershed level.

***Satisfactory Rangeland Condition*** is defined as being in high seral ecological state, greater than or equal to fifty percent (50%) similarity to Potential Natural Community and having stable soils with continuous, vegetative cover and rooting throughout available profile.

***Potential Natural Community*** is defined as the biotic community that would become established if all successional sequences were completed without interferences by humans under the present environmental conditions, and may include naturalized, nonnative plant species.

## Grazing Strategies

Develop grazing strategies to be used in Packer Use Areas and described in annual operating instructions. Provide the public with a *Wilderness Grazing Opportunity Guide* which complements Recreation Use Categories goals and objectives. A successful packstock grazing program must:

- Move or maintain wilderness resources towards the desired conditions.
- Be tailored to the inherent characteristics of soil, vegetation, and topography.
- Enhance wildlife, native plant and fishery resources.
- Provide water quality and watershed protection.
- Be compatible with or enhance other wilderness uses and values.
- Provide sustained and reliable forage for packstock and wildlife.
- Be flexible and adaptable to changes in seasonal precipitation and forage availability.
- Be timely, easily understood and integrated with commercial outfitter and guide operations.
- Be cost-effective in terms of permittee compliance and Forest Service administration.

## Management Standards and Guides

Standard and Guides are developed to achieve the Goals and Objective described above. In addition, many of the standard and guides below are taken directly from the *Sierra Nevada Forest Plan Amendment Record of Decision* dated January 12, 2001.

Assess the hydrologic function of meadow habitats and other special aquatic features during range analysis. Ensure that characteristics of special features are at Proper Functioning Condition

Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock and humans. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (*Spagnum spp.*), (2) mosses belonging to the genus *Meessia*, and (3) sundew (*Drosera spp.*) Complete initial plant inventories of bogs and fens within active packer use areas prior to re-issuing permits.

Keep disturbance, to streambank, natural lake and pond shorelines caused by recreation activities, from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard does not apply to campsites or trailheads.

In stream reaches occupied by, or identified as “essential habitat” in the conservation assessment for, the Paiute cutthroat trout, limit streambank disturbance from livestock to 10 percent of the occupied or “essential habitat” stream reach. Cooperate with State and Federal agencies to

develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.

Use forage utilization standards in conjunction with rangeland suitability criteria, range readiness and recreation strategy objectives, to maintain or reach desired conditions. Determine rangeland suitability for specific sites after completion of resource inventories or completion of NEPA analysis.

Wilderness managers will conduct range readiness and utilization monitoring. One primary need for this monitoring is to adjust or re-establish forage allocations in packer use areas.

Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database.

Apply the utilization standards (Table G-1) according to vegetation types described in the *R5 Rangeland Plant List (1998)* using the key species and key area concept. These standards are based on relative utilization or that percent of use of current production, which is measured at the time packstock, leave the area. They are also based on the height/weight relationship of the plant and include all herbivore by livestock, wildlife, and insects. Where practical and beneficial, use stubble height standards for key species based on the selected utilization standard at a given key area.

Under intensive grazing strategies, where meadows are receiving periods of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted e.g., alternating year rotation meadow closers.

Degraded meadows ( e.g., early seral status with bare soils and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.

Existing special use permits will be reviewed as soon as practicable to determine whether modifications to grazing clauses are necessary to conserve Yosemite toad, Northern goshawk, Great gray owl, California wolverine, Sierra Nevada red fox, Pacific Fisher, Paiute cutthroat trout, and Sierra bighorn sheep. When a determination is made that one of these species is occupying a packer use area, decisions modifying permits to protect those sites will be made in an expeditious manner, but no later than one year after determining that a site is occupied.

Use range readiness criteria as a primary technique to establish grazing start dates for the annual season of packstock use on key areas. Coordinate with wilderness managers from Yosemite and Sequoia-Kings Canyon National Parks prior to giving public notice of grazing start dates.

On key areas use the *Grazing Response Index* method with *Key Species* utilization method to assess overall grazing effects during the current year, and to aid in planning the grazing for the following year. Primary concern is given for the amount of photosynthetically active leaf

material remaining for key plants to recover from grazing.

Revise Forest Orders as needed to establish annual grazing start dates and grazing closure areas, as well as other packstock use regulations for packstock use by private parties.

Encourage use of certified weed free hay and straw. The program will be phased in as certified weed free hay and straw become available. This would apply to pack and saddle stock used by public, livestock permittees, outfitter guide permittees, and local, State, or Federal agencies.

Include weed prevention measures, as necessary, when amending or re-issuing permits (including but not limited to special use permits and pack stock operator permits).

**Table G-1.** Maximum Allowable Utilization Standards for Key Species

<b>Landscape Zone</b>	<b>Rangeland Class</b>	<b>Vegetation Type</b>	<b>High Seral Ecological State</b>	<b>Mid to Low Seral Ecological State</b>
<b>Montane Subalpine</b>	Meadow, Riparian & Upland	Herbaceous Perennials	40% Use By Weight	30% Use By Weight
<b>Montane Subalpine</b>	Meadow, Riparian & Upland	Shrubs & Trees	20% Use Annual Leader Growth	10% Use Annual Leader Growth
<b>Alpine</b>	Meadow, Riparian & Upland	Herbaceous Perennials	20% Use By Weight	10% Use By Weight
<b>Alpine</b>	Meadow, Riparian & Upland	Shrubs & Trees	10% Use Annual Leader Growth	5% Use Use Annual Leader Growth



## A Typical Calendar of Work

January 15th	Finalize rangeland suitability analysis. Review existing grazing strategies, forest closure areas and packer use areas. Make grazing closure recommendations to forest supervisor and prepare annual forest orders. Retrieve snow station data from CA DWR website.
February 15th	Post forest orders for meadow closures and other grazing restrictions. Mail orders and associated maps to cooperators. Retrieve snow station data from CA DWR website.
March 15th	Retrieve snow station data from CA DWR website.
April 1st	Coordinate grazing start date forecasts with wilderness managers from Sequoia-Kings and Yosemite Parks.
April 15th	Retrieve snow station data from CA DWR website. Post a grazing start date forecast based upon existing snowpack, daily temperatures and long range weather forecast. Begin range readiness inspections at lower elevations.
May 15th	Monitor daily temperatures and snowpack runoff rates. Begin range readiness inspections at upper elevations. Complete annual operating plan meetings.
June 1st	Post grazing start dates and allowable forage utilization levels in packer use area. Notify permit administrators and cooperators, and the public.
July 15th	Verify and document packer use areas. Identify key use benchmarks in known packer use areas at lower elevations. Determine hydrological function and ecological condition of benchmarks and make recommendation on appropriate standards and guidelines.
August 15th	Verify and document packer use areas. Establish key use benchmarks in known packer use areas at upper elevations. Continue analysis of key benchmarks. Observe packstock grazing patterns and impacts. Use <i>Grazing Response Index</i> .
September 1st	Begin utilization monitoring and continue using <i>Grazing Response Index</i> .
October 15th	Finalize utilization monitoring. Record date(s) of fall snow elevations which end the availability of forage. These dates, in combination with established start dates, define the season of use for a particular year. Obtain actual use information from commercial operators.
October 30th	Summarize actual use by season of use and complete grazing statistical reports.
November 30th	Summarize all rangeland and wildlife inventories and update rangeland suitability analysis maps.

## Grazing Start Dates

Historically, grazing seasons for the wilderness have been from June 15th through October 30th with most use starting after July 1st. Timely posting of grazing start dates, well in advance of the grazing season, will allow commercial operators and visitors to make trip itineraries with some level of certainty on where and when forage will be available in the wilderness. Effective grazing start dates are designed to prevent unacceptable mechanical disturbance to surface soil and vegetation, which is defined as mechanical breakage of the root-soil complex to the point that vigor of individual plants, or networks of plants, deteriorates as evidenced by change in species density, or composition, or both. This breakage increases soil erosion over what would be natural without grazing.

Grazing start dates are established using previous years data, previous special restrictions, existing snow data, National Park Service data, and range readiness determinations.

**Table G-2.** Range Readiness Benchmarks, Sierra & Inyo National Forests

Benchmark	RMU	Elevation	Snow Station	River Basin	Elevation
Jackass Meadow	Jackass	6,950 ft.	Jackass Mdw	San Joaquin	6,950 ft
Boneyard Meadow	Blasingame	7,600 ft	Tamarack Ck	San Joaquin	7,250 ft
Blayne Meadows	Florence	7,600 ft.	Florence Lk	San Joaquin	7,200 ft
Statum Meadow	Collins	8,300 ft.	Statum Mdw	Kings River	8,300 ft
Graveyard Meadow	Mono	9,000 ft.	Lake Edison	San Joaquin	7,800 ft
Kaiser Pass Meadow	Kaiser	9,100 ft.	Kaiser Pass	San Joaquin	9,100 ft
Rose Marie Meadow	Bear Creek	9,600 ft.	Rose Marie	San Joaquin	10,000 ft
Alger Lakes	Rush Creek	10,720 ft.	Gem Pass	Mono Lake	10,750 ft
Purple Lake	Fish Creek	10,000 ft.	Mammoth Pass	Owens	9,300 ft
Horse Heaven	Fish Creek	9,600 ft.	Mammoth Pass	Owens	9,300 ft
McGee Creek	McGee Lks	8,400 ft.	Rock Ck Lakes	Owens	10,000 ft
Rock Creek Lake	Rock Creek	9,760 ft	Rock Ck Lakes	Owens	10,000 ft
Horton Creek	Horton Lk	8,800 ft	E. Piute Pass	Owens	10,800 ft
Bishop Creek	Bishop Ck	9,200 ft	Bishop Pass	Kings	11,200 ft
*Cottonwood Ck	Cottonwood	9,600 ft	Cottonwood	Owens	10,150 ft

*\* Between Bishop Creek and Cottonwood Creek there are no identified benchmarks. Range readiness will coincide with Sequoia-Kings Canyon National Park start dates.*

**Range Readiness Determinations.** Refer to the *R5 Rangeland Analysis and Planning Guide* (1997) for a detailed description of the range readiness process. During normal years, start dates can be anticipated to begin by July 15th at 9,000 feet elevation and August 15th at 10,000 feet elevation. During wet years, grazing start dates could be delayed 15 to 30 days. In dry years, grazing start dates could begin 15 or more days earlier than normal years. Day time temperatures must reach 45-50 degrees for plant emergence. Optimum growth is reached with temperatures



exceeding 60 degrees. Ten to fifteen days delay in plant development can be expected on north slope exposures compared to south slope exposures. Ten to fifteen days delay in plant development can be expected for each 1,000 feet rise in elevation. Define readiness dates as being (1) when soil is firm enough in the general area that livestock will not cause trampling damage to soil and vegetation, and (2) when phenological stage or growth of vegetation meets standards identified in the regional guide. Representative indicator plants include:

- |  |  |
|--|--|
| • Shorthair sedge ( <i>Carex filifolia</i> )         | 4 inch growth, seeds forming             |
| • Brewers reedgrass ( <i>Calamagrostis breweri</i> ) | 4 inch growth, seeds forming             |
| • Kings ricegrass ( <i>Ptilagrostis kingii</i> )     | 4 inch growth, seeds forming             |
| • Tufted hairgrass ( <i>Deschampsia caespitosa</i> ) | 6 inch growth, heads beginning to emerge |
| • Nebraska sedge ( <i>Carex nebraskaensis</i> )      | 6 inch growth, heads beginning to emerge |
| • Beaked sedge ( <i>Carex utriculata</i> )           | 6 inch growth, heads beginning to emerge |

## Establishment and Assessment of Packer Use Area Benchmarks

Prior to conduction utilization studies, key use benchmarks need to be established. Many have already been identified which will be used in future analysis and monitoring. Those sites were selected based on (1) proximity to transportation livestock camps and known key use areas; (2) meadow and riparian community types in close proximity to water containing key forage species; (3) study plots which would show change in time with change in management; areas within each meadow complex which have indicators of human disturbance; (4) limited or absent influences by commercial livestock; (5) well dispersed and representative benchmark locations which could be reasonably monitored and administered annually.

When benchmarks are established, they need to be assessed for hydrological function and ecological condition. Once the assessment is complete allowable utilization standards for the classification of a key area can be assigned.

**Selection of Benchmarks.** The key use area concept is described in *Utilization Studies and Residual Measurements BLM TR 1734-3*. A visual demonstration of the process and practical adaptation to rangelands in California is presented in the video *Selecting Key Areas and Key Species*. To assure a consistent approach to benchmark selection and evaluation, range managers, interdisciplinary teams and interested cooperators need to study these technical guides before beginning the task. Key points made from the video demonstrate that well selected benchmarks should:

- Reflect acceptable grazing levels to achieve desired conditions
- Contain key forage species in adequate abundance to apply a use standard
- Be well monumented and photographed on the ground and documented in the record
- Be accurately delineated on an aerial photo or map and geo-located for GIS application
- Have a sketched layout of the monitoring transect
- The location selection needs to be agreed upon by the analysis team and interested stakeholders

**Assessment of Benchmarks.**

Proper functioning condition of a meadow or riparian complex is assessed by using either the *Lotic Riparian Standard Checklist* for perennial streams and springs or the *Lentic Riparian-Wetland Standard Checklist* for meadows, seeps, and fens using the BLM booklet *Process for Assessing Proper Functioning Condition TR 1737-9*. Teams are used to conduct the assessments.

Ecological condition of a meadow or riparian complex is assessed using the soil and vegetation ecological indicators from the *Ecological Condition Checklist*. Team observations are used for these indicators.

Paced frequency vegetation transect is used to determine the graminoid to forb ratio and percent ground cover on each benchmarked plant community. The data from analysis is used in the *Ecological Condition Checklist* to help determine the vegetation ecological indicators. Once proper functioning conditions, soils data and vegetative data are gathered, the team can then make a determination of ecological and assign proper use standards to a key area.

**Paced Frequency Method.** Paced frequency determines the graminoid to forb ratio for wet and moist meadows sites by species group and species count. The *R5 Range Monitoring Project* (2001) is currently developing a grass to forb ratio index which will rate (within 80% confidence levels) the probable ecological status of a sampled community type based upon species abundance and community diversity. Taxonomic identification of individual species may be done but is not required. Sampling is based on counting the total number of different species, within a species group, for a 5X5 cm sample frame (e.g., Frame #1 equals 3 counts for 3 distinct grass species -and- 2 counts for 2 distinct forb species. The ratio for that sample frame is 3:2 or 67%). A minimum of 60 sample frames are read within a homogenous plant community.

This method is intended to be used as a vegetation indicator (e.g. *Ecological Condition Checklist*). It is not intended to be used as a trend transect. Combine use with the monumented utilization transect line as described in *Selecting Key Areas and Key Species* video. Refer to *Sampling Vegetation Attributes BLM TR 1734-4* for conducting the paced frequency method.

**Table G-3a. Packer Use Area Benchmarks, Inyo NF**

	<b>Wilderness Areas</b>	<b>Packer Use Area</b>	<b>Benchmark Location</b>
19	John Muir	<i>Fish Creek</i>	Horse Heaven
20	John Muir	<i>Fish Creek</i>	Minnow Creek
21	John Muir	<i>Fish Creek</i>	Purple Lake
29	John Muir	<i>McGee Lakes</i>	Big McGee Lakes
30	John Muir	<i>McGee Lakes</i>	Red Meadow
31	John Muir	<i>McGee Lakes</i>	White Meadow
57	Ansel Adams	<i>San Joaquin</i>	Clark Lakes Meadow

**Table G-3b.** Packer Use Area Benchmarks, Sierra NF

	<b>Wilderness Area</b>	<b>Packer Use Area</b>	<b>Benchmark Location</b>
1	Ansel Adams	<i>77 Corral</i>	Corral Meadow
2	John Muir	<i>Bear</i>	Hilgard Meadow
3	John Muir	<i>Bear</i>	Rose Marie Meadow
4	John Muir	<i>Bear</i>	Upper Bear Creek Meadow
5	John Muir	<i>Black Cap</i>	Lightning Corral
6	John Muir	<i>Black Cap</i>	Maxon Basin Meadow
7	John Muir	<i>Black Cap</i>	Roman Four Creek
8	John Muir	<i>Blasingame</i>	Manse Meadow
9	John Muir	<i>Blasingame</i>	Rodeo Meadow
10	John Muir	<i>Cassidy</i>	Fern Lake Meadow
11	John Muir	<i>Cassidy</i>	String Meadow
12	John Muir	<i>Collins</i>	Chain Lakes
13	John Muir	<i>Crown Valley</i>	Crown Lake
14	John Muir	<i>Crown Valley</i>	Scepter Lake
15	Ansel Adams	<i>Dike Creek</i>	Bench Canyon
16	Ansel Adams	<i>Dike Creek</i>	Stevenson Meadow
17	Ansel Adams	<i>Dike Creek</i>	Stevenson Meadow Lower
18	Dinkey Lakes	<i>Dinkey</i>	First Dinkey Lake
22	John Muir	<i>Florence</i>	Blaney Meadow
23	John Muir	<i>Florence</i>	Jackass Meadow
24	John Muir	<i>Florence</i>	Sally Keyes Lakes
25	Dinkey Lakes	<i>Helms</i>	Cliff Lake
26	Dinkey Lakes	<i>Helms</i>	Helms Meadow
27	Dinkey Lakes	<i>Helms</i>	Nelson Lake
28	John Muir	<i>Hot Springs</i>	Mono Hot Springs
32	John Muir	<i>Minnow</i>	Fish Creek
33	John Muir	<i>Minnow</i>	Grassy Meadow
34	John Muir	<i>Minnow</i>	Jackson Meadow
35	John Muir	<i>Mono</i>	Devils Bathtub Meadow
36	John Muir	<i>Mono</i>	Graveyard Lakes
37	Ansel Adams	<i>N. Jackass</i>	Ann Lake
38	Ansel Adams	<i>N. Jackass</i>	Saddler Lake Meadow
39	Ansel Adams	<i>N. Jackass</i>	Saddler Peak Meadow
40	John Muir	<i>Piute Creek</i>	French Canyon
41	John Muir	<i>Piute Creek</i>	Hutchinson Meadow
42	John Muir	<i>Piute Creek</i>	Moon Lake
43	John Muir	<i>Piute Creek</i>	Piute Creek Trail
44	John Muir	<i>Post Corral</i>	Big Maxson Meadow
45	John Muir	<i>Post Corral</i>	Hobler Lake
46	John Muir	<i>Post Corral</i>	Long Meadow
47	John Muir	<i>Post Corral</i>	Post Corral Meadow
48	John Muir	<i>Post Corral</i>	McGuire Lakes
49	John Muir	<i>Red Mountain</i>	Devils Punchbowl
50	John Muir	<i>Red Mountain</i>	Fleming Lake
51	John Muir	<i>Red Mountain</i>	Hell For Sure Lake
52	Ansel Adams	<i>Rush Creek</i>	Alger Lake
53	Ansel Adams	<i>Rush Creek</i>	Gem Pass Meadow
54	Ansel Adams	<i>Rush Creek</i>	Lower Davis Lake Meadow
55	Ansel Adams	<i>Rush Creek</i>	Lower Marie Lakes Meadow
56	Ansel Adams	<i>Rush Creek</i>	Spooky Meadow

Wilderness Area		Packer Use Area	Benchmark Location
58	John Muir	<i>Upper Mono</i>	Fish Camp Meadow
59	John Muir	<i>Upper Mono</i>	Fourth Recess
60	John Muir	<i>Upper Mono</i>	Hopkins Lake Meadow
61	John Muir	<i>Upper Mono</i>	Mono Creek @ Golden Lake
62	John Muir	<i>Upper Mono</i>	Pioneer Basin
63	John Muir	<i>Upper Mono</i>	Silver Pass Lake
64	John Muir	<i>Upper Mono</i>	Third Recess
65	John Muir	<i>Woodchuck</i>	Indian Springs Meadow
66	John Muir	<i>Woodchuck</i>	Woodchuck Lake

## Utilization Methods

### Key Species Method -(BLM Technical Reference 1734-3)

This utilization method is based on an ocular estimate of the amount of forage removed by weight on individual key species and observations are recorded in one of seven utilization classes. This method is adapted to areas where perennial grasses and forbs are the key species. This method is rapid. The estimated percentage of forage removed is recorded in one of seven broad classes rather than as a precise amount. The method is reasonably accurate, depending upon the ability of the examiners.

### Grazing Response Index

The Grazing Response Index (GRI) is used to assess the effects of annual grazing pressures and repetitive grazing during the growing season and to aid in planning the grazing pattern for the following year. Understanding plant physiology and plant response to grazing is essential in assessing grazing systems. Consequently, there is a need for a monitoring tool that adequately estimates rangeland use due to grazing. The examiner must not only assess how much of the plant was grazed, but also when the plant was grazed and how many times it was defoliated during the growing season. GRI is not intended as the only method for resolving resource conflicts. It should be used in combination with utilization monitoring and rangeland assessments to determine appropriate management actions. GRI considers three key concepts related to plant health: (1) frequency of defoliation, (2) intensity of use, and (3) opportunity to grow or regrow.

## Rangeland Suitability Analysis

**Definition of Suitable Rangelands.** The appropriateness of applying certain resource management practices to a particular area of land as determined by an analysis of the economic and environmental consequences and alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

**Rangeland analysis.** Current suitable rangelands described in Table G-4 are based on total capable meadow acres; previous 1960 era suitability maps and existing forest closures for site-specific areas. Capable upland acres, which have not been inventoried or monitored, have not been used in either past or present suitability determinations. Adjustments are currently needed to the existing suitability analysis. For the immediate future analysis will be based on three topics of concern (1) protection and restoration of aquatic, riparian and meadow ecosystems; and (2) providing for the viability of native plant and animal species associated with these ecosystems, and (3) protection of heritage resources. Degraded meadows will require total rest from grazing until they have recovered and have moved to mid- or late seral status. An assessment of key benchmark areas will be completed within 5-years. An overall inventory of meadows and riparian is scheduled for completion within 10-years.

Occupied Yosemite toad habitats will also require packstock exclusion. An inventory of suitable habitats for the toad is required within 3-years. If surveys are not completed by year 2004 then potential suitable habitats will be managed as occupied habitats and grazing exclusions would be applied.

**Suitability Determinations.** Make grazing suitability determinations to identify allowable use areas, closures and restored areas which can be re-grazed. Make timely determinations following the current season's on-the-ground range, habitat, and heritage resource inventories. The determination should be made using an interdisciplinary team consisting of the wilderness manager, special use administrator, rangeland specialist, biologist, archeologist and earth science specialist. Table G-4 is a year 2000 listing of closure areas.

**Table G-4.** Packstock Restrictions by Forest Closures, Year 2000

Resource Mgt Unit	Meadow Closure Areas	Meadow Acres	Riparian & Upland Acres	Reason for Closure
Bear Creek	Hilgard Branch	36	368	$\Lambda, \lambda$
Bear Creek	Rosemarie	14	6	$\Lambda, \lambda$
Crown Valley	Crown Lake	23	0	$\lambda$
Crown Valley	Crown Admin Site	6	0	$\Sigma$
Dinkey & Helms	Dinkey Lakes	133	300	$\lambda, \Theta, X$
Fish Creek	Cascade Valley	0	415	$\lambda, \mu, X,$
Minnow Creek	Cascade Valley	0	107	$\lambda, \mu, X,$
Upper Mono	Pioneer Basin	119	700	$\mu, \lambda, \omega$
Post Corral	Big Maxson Admin Site	4	0	$\Sigma, \lambda$
Mount Whitney	Shepard Pass & Mt. Whitney Trail	No data	No data	$\Theta$

$\mu$  = Unsatisfactory meadow conditions, stock travel allowed, no grazing allowed

$\Lambda$  = Unsatisfactory meadow conditions, stock travel allowed, limited grazing, alternate year closures

$X$  = Congested camping area, stock travel allowed, no grazing allowed

$\Theta$  = High use recreation area & public safety, no livestock allowed

$\Sigma$  = Forest Service administrative site, no public transportation livestock allowed

$\omega$  = Sensitive wildlife, fisheries or plant habitats, no livestock allowed

$\lambda$  = lake shore, streamside or watershed protection, no livestock allowed

**Grazing Opportunity Guide.** As we begin to apply all the various grazing start dates, use standards, livestock handling guidelines, limited operating periods, and closures on packer use areas it will become increasingly necessary to convey the forest orders and grazing strategies in an easily understood format. A *wilderness grazing opportunity guide*, similar to that used by the National Park Service, is highly recommended. Use the forest websites and geographic information systems to display narratives and corresponding reference maps at the 1:24,000 scale.

Packer use areas (Rangeland Management Units) are currently defined at the 5th field watershed level ranging in size from 4,200 to 46,000 acres. As field inventories are completed, re-define the packer use areas using 6th field watersheds less than 10,000 acres in size. Use easily recognized watershed delineations that account for trail systems and recreation categories.

Identify grazing strategies that would be applied to those 6th field watersheds. Establish grazing capacities based on the suitable acres within those 6th field watersheds. Provide stock night limits, where necessary, to stay within the allowable utilization levels. Maintain a grazing response index that has a numerical value which is either positive or neutral.

Justified temporary closures (1 year) are when grazing use levels are exceeded and grazing response indices are negative. Justified long term closures (2 or more years) are when key areas are in unsatisfactory rangeland condition. Using the same reasoning, re-open key areas when meadow conditions have been restored to satisfactory condition.

## Typical Livestock Operation Plan Under Special Use Permit (*Example*)

As a minimum, the following information and clauses need to be included in the Livestock Operation Plan for each Outfitter and Guide Special Use Permit.

**Authorization for Livestock Use.** This Transportation Livestock Operation Plan is made part of Special Use Permit #\_\_\_\_\_ issued to (permittee's name) on (date of issuance) by Forest Supervisor (name), in accordance with FSM 2721.53, Outfitter and Guide Service, and 2722.15 Livestock Areas. This Transportation Livestock Operation Plan livestock are to be managed in support of the outfitter guide services provided to the public.

The permit holder is authorized the use and grazing of pack and saddle stock within the identified wilderness and non-wilderness Livestock Areas only when such use is incidental to the providing of a service to the public as authorized by permit.

**Area of Use.** The packer use area(s) is described as follows and as shown on the attached map.

**Authorized Numbers.** Animal nights, forage allocations, and additional grazing restrictions are designated in this Transportation Livestock Management Plan as follows:

Packer Use Area	Start Date	Stock Kind	Head Numbers	Head Nights	Allowable Use Level	Area Restrictions

**Plan of Operation.** Operating instructions, specific to livestock and range management and implementing the Transportation Livestock Management Plan, will be incorporated in the Annual Plan of Operation.

**Actual Dates of Use.** The permit holder will not allow any of his stock to graze on National Forest lands until the Responsible Forest Officer has made a range readiness check and has found the range ready for use. The Permit holder will remove the stock and will not allow stock to graze when a utilization check by the Forest Officer reveals that the range has been utilized to allowable levels.

The permit holder may be limited to one-day trips (in and out the same day) or be required to pack in and supply all necessary feed when range conditions do not allow grazing of pack stock. Stock night use and or animal unit months of grazing may be limited based on a Forest Service determination of range conditions using the best information available and annual changes to the approved allocations may be made in the Annual Operating Plan.

**Compliance with Applicable Laws.** Transportation livestock will be managed in compliance with the applicable Forest Land and Resource Management Plan. Owners of all livestock grazed under permit must comply with the state livestock laws.

**Weed-free Certified Forage.** Incorporate regional Special Orders that require the use of weed-free certified forage and straw. Inspect pack stations and pack camps where supplemental feeds

are being stored and used. Retain copied receipts show proof of purchase for weed-free certified feed.

**Structural Range Improvements.** List all existing structural improvements within assigned Livestock Areas, and Range Allotments if there is dual use of the facility. Clearly describe assigned maintenance responsibilities for exiting structures. For facilities with multiple uses, equitably divide maintenance responsibilities based on each permittee's level of use. Include a schedule for initiating range improvements with responsibilities for costs and labor incurred and planned completion dates.

All improvements will be maintained to original construction standards. Work must follow written instructions provided by the Forest Service. Any fences or other facilities maintained or constructed under this permit must be approved in writing by the Forest Officer in charge.

Improvement Name & Number	Packer Use Area	Referenced Location	Maintenance Responsibility	Maintenance Frequency

## Stock Use and Handling Clauses

- Emphasize minimum impact camping techniques when interacting with wilderness users or developing informational handouts.
- Require that campsites be located 100 feet or more from lakeshores, trails, and streams where terrain permits, but in no case closer than 50 feet.
- Advocate and enforce the pack-it-in, pack-it-out program for trash.
- Allow loose herding of pack and saddlestock only where trail conditions make it unsafe to tie stock together. On Sierra NF prohibit loose herding of pack and saddle stock, except where area is signed.
- Prohibit overnight picketing or tethering of stock in meadows. Require that stock tied overnight be tied to hitch lines on hard sites.
- Require that feed for recreational stock be packed into the wilderness under the following conditions: before the grazing season, where feed is unavailable, or where grazing would damage natural resources.
- Prohibit overnight tie-up of stock within one hundred feet of lakes, streams, trails and campsites. Exception is given when loading or unloading. When loading or unloading tie stock only to trees eight inches in diameter or larger.
- Prohibit picketing or tethering of stock in meadows or within 100 feet of meadows.



## Recommended Reading and Viewing

- California Department of Water Resources. 2001. Division of Flood Management Snowpack Status Website (<http://cdec.water.ca.gov>).
- National Research Council. 1994. *Rangeland Health, New Methods to Classify, Inventory, and Monitor Rangelands*. National Academy Press. Washington D.C.
- Reed, Floyd, Roy Roath and David Bradford. 1999. *The Grazing Response Index: A Simple and Effective Method to Evaluate Grazing Impacts*. Rangelands 21(4). Society For Range Management. Denver, CO.
- U.S. Bureau of Land Management. 1993. *Process for Assessing Proper Functioning Condition TR 1737-9* Bureau of Land Management Service Center, Denver, CO.
- U.S. Bureau of Land Management. 1996. *Utilization Studies and Residual Measurements TR 1734-3* Bureau of Land Management Service Center, Denver, CO.
- U.S. Forest Service. 1997. *Guidebook on Outfitting and Guiding R1-97-23*. Northern Region, Missoula, MT.
- U.S. Forest Service. 1997. *Exhibit GRI: Grazing Response Index R2-2200-GRI, Rangeland Analysis and Management Training Guide*. Rocky Mountain Region, Denver, CO.
- U.S. Forest Service. 1997. *Rangeland Analysis and Planning Guide R5-EM-TP-004, Rangeland Plant List* Southwest Region, Vallejo, CA.
- U.S. Forest Service. 2000. *Region 5 Range Meadow Project*. Adaptive Management Services, Tahoe National Forest, Nevada City, CA.
- U.S. Forest Service. 1999. *California Rangeland Interagency Video Series - Selecting Key Areas and Key Species*. Southwest Region, Vallejo, CA.
- U.S. Forest Service. 2000. *California Rangeland Interagency Video Series -- Trend Monitoring of Riparian Vegetation*. Southwest Region, Vallejo, CA.
- U.S. Park Service. 1994. *Guide to the wilderness forage areas of Sequoia and Kings Canyon National Parks*. Sequoia & Kings Canyon National Parks, Three Rivers, CA.

